R E P O R T R E S U M E S

ED 020 551 24 CG 002 339

A PERSONALITY VARIABLE OF PREADOLESCENT YOUTH IN RELATION TO THE ELEMENTARY SCHOOL PROGRAM. FINAL REPORT.

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REPORT NUMBER BR-7-C-012 PUB DATE 67
GRANT OEG-1-7-070012-3911
EDRS PRICE MF-$0.50 HC-$2.72 66P.

DESCRIPTORS- *INDIVIDUAL CHARACTERISTICS, PERSONALITY ASSESSMENT, *SEX DIFFERENCES, *ELEMENTARY SCHOOL STUDENTS, *STUDENT SCHOOL RELATIONSHIP,

THE OVERALL OBJECTIVE OF THE STUDY WAS TO DETERMINE THE DIRECTION AND EXTENT OF THE RELATIONSHIP BETWEEN INTRASEX VARIATIONS ALONG THE MASCULINITY-FEMININITY CONTINUUM AND VARIATIONS IN SEVERAL VARIABLES RELATED TO YOUTH IN THE ELEMENTARY SCHOOL INCLUDING--(1) JUDGED BEHAVIOR ACCEPTABILITY, (2) STANDARDIZED TEST ACHIEVEMENT IN THE LANGUAGE ARTS, READING, AND ARITHMETIC, (3) GRADE-POINT AVERAGE, (4) MEASURES OF EIGHT DIFFERENT SCHOOL INTERESTS, AND (5) INTELLIGENCE. THE STUDY DESIGN WAS ESSENTIALLY CORRELATIONAL WITH TWO TYPES OF ANALYSES OF INTRASEX VARIATIONS. IN ADDITION, AN EXAMINATION OF THE DATA WAS MADE FOR EXPECTED INTERSEX DIFFERENCES PREDICTED BY FINDINGS IN THE REVIEW OF THE LITERATURE. THE SAMPLE CONSISTED OF 181 SIXTH-GRADE STUDENTS IN VIRGINIA PUBLIC SCHOOLS WHO WERE TAUGHT BY FEMALE TEACHERS (EXCEPTIONS WERE NOTED). THE RESULTS SHOW NEGATIVE CORRELATIONS BETWEEN MENTAL MASCULINITY IN BOTH SEXES AND SCHOOL-RELATED INTERESTS AND ACHIEVEMENT AREAS, SUGGESTING STRONGLY THE NEED FOR CHANGES IN THE SCHOOLS, PARTICULARLY ELEMENTARY SCHOOLS, WHICH WILL ACCOMMODATE PROGRAMS OF STUDY AND INSTRUCTIONAL PROCEDURES TO INDIVIDUALS AT EACH END OF THE MASCULINITY-FEMININITY CONTINUUM. (CG)

BR-7-C-012
PA-24

ED020551

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Final Report

Project No. 7-C-012

OEG-1-7-070012-3911

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ACKNOWLEDGEMENT

Grateful and heartfelt appreciation is expressed to the many fine teachers, past and present, whose inspiration and influence have culminated in this effort. Any merit this work may possess belongs to them, while its insufficiencies rest on the author.

Many thanks are given to the boys and girls and their teachers without whose kind cooperation this study could not have been accomplished.

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I. INTRODUCTION TO THE STUDY

Background

The learning of behaviors appropriate to one's biological sex is crucial to normal personality development and optimal social adjustment. The acquisition of the proper sex role identification and the development of sex appropriate role behaviors is a bio-social task, initially biological and physiological in nature, with sociological and psychological factors assuming a predominant importance very early in life (Kagan, 1964a).

Cultural transmission of appropriate sex role behaviors is accomplished by societal agents, particularly parents, teachers, and significant peer groups. The primary methods of socialization appear to be identification with appropriate models in the environment and reinforcement of approved behavioral patterns by societal agents. Through such processes there is gradual acquisition of a pattern of sex role behaviors. As a consequence of variations in both physio-biological and socio-psychological determinants of sex role behaviors, the trait of masculinity-femininity appears in each sex on a continuum approximately normally distributed (Terman & Miles, 1936).

The sex type character of the elementary school is preponderantly feminine. In this environment the prepubescent boy is struggling to develop a masculine sex role identification and masculine sex type behaviors against inhibiting and, at times, hostile influences. In the process of sex role development of children, the elementary teacher plays an important part, acting as a model for identification for some children, primarily girls, and as a reinforcer of sex appropriate behaviors for all (Kagan, 1964a, 1964b).

If it is indeed true that the female elementary teacher typically imposes a feminine standard in regard to the performance and behavior of both boys and girls, then it follows that boys most successful in the development of appropriate sex role behaviors will find such behaviors judged unacceptable in accordance with this feminine standard. Thus, it is a distinct possibility that boys high in masculinity tend to react to the effeminate environment of the elementary school negatively so that their in-school performance and attitude are adversely affected.

The thesis of the study proposed here is that in boys and girls intrasex variations along the masculinity-femininity continuum interact with the psychological milieu of the elementary school in such a way as to produce systematic variations in school related variables - tested and graded achievement, subject interests, teacher-judged behavior acceptability, and intelligence.

Rationale

In the rediscovery by educators of educationally significant intersex differences in their pupils there is apparent an increasing tendency to think in terms of a boy-girl dichotomy. Recent literature on sex differences (e.g., Grambs & Waetjen, 1966) seems to encourage the development of sex stereotypes. This development could lead to practices such as segregation of the sexes (Lyles, 1966), which may be just as unsound as earlier practices which assumed that no significant sex differences of educational importance existed.

It seems important for educators to be aware of the extent of variations <u>within</u> each sex as well as mean differences <u>between</u> sexes. The accommodation to educationally meaningful intersex differences is best not done at the expense of overlooking or ignoring the possibility of intrasex differences. The need exists for greater understanding of the nature of sex differences, both within and between the sexes, and not only a consideration of the extent of such differences but their origin and development as well (Maccoby, 1966).

A number of intersex differences in children have been established in variables related to the elementary school - standardized test achievement, teacher-assigned grades, teacher-judged behavior acceptability, interests in school subjects, and others. These mean sex differences are accompanied by considerable overlapping between sexes on these variables as well as a wide range of variation within each sex. It is the contention of this study that such intersex and intrasex variations are related to the masculinity-femininity trait of personality.

While it may be of interest and useful for educators to know of intersex differences, (e.g., boys are less interested in music than girls), it might be of even greater interest, and potentially of greater importance, to establish a relationship between a particular variable and a trait of personality, (e.g., interest in music and mental masculinity). In this study it is hypothesized that both intersex and intrasex variations in music interest are correlated with the degree of mental masculinity, (i.e., in both sexes high masculinity is expected to accompany low interest in music; individuals of both sexes who test low in masculinity would be expected to be high in music interest).

In a similar fashion the other intersex variables mentioned earlier are to be examined with reference to the masculinity trait. Significant relationships, if established, would tend to direct attention away from the dichotomization of behaviors into male-female constellations and focus it on a pivotal personality trait manifested in both sexes.

The overall objective of this study, then, is to determine the relationship in preadolescent youth between mental masculinity as it varies within each sex to particular variables of the school environment - teacher-rated acceptability of behavior, tested achievement, teacher-assigned grades, inventoried school interests, and general intelligence.

Review of Literature

The literature related to psychological and sociological determinants of sex type has been most recently reviewed and summarized by Kagan (1964a). In this review he describes three kinds of experiences which act to determine the degree of masculinity-femininity of an individual: (1) identification, the belief that some of the attributes of a model belong to the self, (2) acquisition of culturally defined sex attributes, and (3) perception that others regard the individual as possessing the appropriate sex-typed characters. It is by means of the above processes that the individual gradually acquires a sex role identification. The role, in this process, of the elementary school and its chief instrument, the elementary teacher, is a matter of importance for this study.

The elementary school is typically perceived by boys as a feminine environment populated by feminine objects (Kagan, 1964b). Of equal, or perhaps greater importance is the finding that the behavioral standards which teachers typically impose on their students are more suitable for girls than for boys. Teachers tend to rate as more serious noisy, rebellious, and outgoing behaviors which threaten orderliness. Thus boys show a higher incidence of identified problem behavior and are punished more often and more severely than girls (Kvaraceus, 1960).

In a study of objectionable pupil behaviors (Clark, E. J., 1951) the findings indicate that twelve of the eighteen most frequently mentioned misbehaviors listed by teachers are more characteristic of boys than of girls - makes noises, defaces, bullies, crowds ahead, teases, shows off, picks on others, disturbs, is impolite, interrupts, gets out of line, fails to obey.

Stouffer and Owens (1955) in a replication of the earlier study of E. K. Wickman concluded that "teachers were most concerned aboutthe child who showed himself aggressive and whose behavior was not conducive to the smooth running of the school machinery..." (Stouffer and Owens, 1955, p. 331). Such a child is, doubtless, more often male than female.

An examination of the literature was made to determine, as far as possible, the direction and extent of intersex differences in interest and achievement areas. The generalizations concerning intersex differences provided in the remaining paragraphs of this section are presented with the realization that there is some evidence to the contrary.

School Achievement in Language Arts and Reading. There are a vast number of studies which indicate that girls achieve higher scores on standardized tests in language arts and reading than boys (Stroud & Lindquist, 1942; Clark, W. W., 1959; Tyler, P. T., 1960; McGuire, 1961). Additional studies show a superiority for girls in word fluency (Havighurst & Breese, 1947; Heizberg & Lepkin, 1954) and also in vocabulary (Wechsler, 1958).

School Achievement in Arithmetic. The literature concerning arithmetic achievement is not as clear-cut as that for language arts. Boys appear to perform less well than girls in computation (Havighurst & Breese, 1947), but in mathematical reasoning they are superior (Heilman, 1933; McNemar, 1942; Stroud & Lindquist, 1942; Wechsler, 1958; Clark. W. W., 1959; McGuire, 1961).

School Grades. The literature overwhelmingly supports the generalization that girls outperform boys in school in the task of earning grades (Swenson, 1943; Northby, 1958; Coleman, 1961; Heimann & Schenk, 1962; Phillips, 1962).

School Interests: Art, Music, Home Economics, Sedentary Activities. Girls show greater interest than boys in art, music, home arts, and sedentary activities (Mussen & Martin, 1960; Tyler, F. T., 1960).

School Interests: Science, Social Studies, Manual Arts, Physical Education. Most studies reveal that boys have a greater interest in science, social studies, manual arts, and physical activities than girls (Mussen & Martin, 1960; Tyler, F. T., 1960; Kagan, 1964a).

General Intelligence. Consistent intersex differences in intelligence have not been established (Terman, 1925; McNemar, 1942; Havighurst & Janke, 1944; Fitt & Rogers, 1950; Miele, 1958; Clark, W. W., 1959; Heimann & Schenk, 1962).

Evidence tending to support each of the above generalizations is reviewed and summarized by Tyler, L. E., 1947; Terman & Tyler, L. E., 1954; Anastasi, 1958; and Maccoby, 1966.

II. DESIGN OF THE STUDY

Overview

The overall objective of the study is to determine the direction and extent of relationship between intrasex variations along the masculinity-femininity continuum and variations in several variables related to youth in the elementary school - in particular, teacher-judged behavior acceptability, standardized test achievement in language arts, reading, and arithmetic, grade point average, measures of eight different school interests, and intelligence.

The design developed to accomplish this objective is essentially correlational in nature (Shontz, 1965). Two types of analysis will be made of intrasex variations: (1) Spearman Rank-Difference Correlations between masculinity and fourteen other variables, and (2) mean comparisons of the upper and lower 27% of the masculinity-femininity continuum in each sex for fourteen variables. In addition, an examination of the data will be made for expected intersex differences predicted by findings in the review of literature.

Sample

The sample for the study consisted of 181 sixth grade students in Virginia public schools (1966-67) who were taught entirely by female teachers (exception noted later). The ages of subjects in the sample are summarized in Table I (page 9).

The sample was selected in accordance with U. S. Census Data (1960) concerning the distribution of population as summarized in Table II.

The racial composition of the sample was 75 white males, 8 Negro males, 89 white females, 9 Negro females.

For each subject the socio-economic status was determined on the basis of parents' occupation using the following as criteria for assignment: Middle Class, business and professional, proprietors, managers, and officials, foremen, skilled craftsmen, farm owners, teachers; Lower Class, semi-skilled factory workers, service workers, laborers and unskilled workers, clerical and lower white-collar employees, families on relief (Young & Mack, 1962). The result of this classification was 87 subjects designated as Middle Class and 94 designated as Lower Class.

TABLE I AGES OF SUBJECTS BY SEX

SEX	N	MEAN AGE (MONTHS)	S. D.	SIGNIF.
MALE	83	148.37	11.18	NS
FEMALE	98	146.74	9.64	

TABLE II DISTRIBUTION OF THE SAMPLE

AREA OF SAMPLE	1960 CENSUS	SAMPLE OBTAINED	BOYS	GIRLS	N
CITIES OVER 100,000	27.5%	27.1%	20	29	49
CITIES UNDER 100,000	42.4%	45.8%	41	42	83
RURAL	30.1%	27.1%	22	27	49
TOTALS	100.0%	100.0%	83	98	181

Selection of sample. The procedure for selection of subjects varied somewhat for the three different geographical areas from which the sample was drawn. In the city over 100,000, from a group of schools drawing about equally on middle and lower class homes, one elementary school was selected at random. All of the sixth grade students of this school were included in the sample (except two boy absentees).

In the rural community four elementary schools were available. Two of these were eliminated, one because it was exclusively Negro, and another because the sixth grade class was combined for instruction with the fifth. The sixth grade students of the remaining two schools served as the rural sample (absentees, two boys, one girl).

In the city under 100,000 all sixth grade students attended a central school where they had been assigned in accordance with homogenous grouping into eighteen sections (criteria for grouping: I. Q., achievement test performance, and recommendation of previous school). Rather than a selection at random, three sections were chosen to achieve a suitable balance of ability levels in the sample.[1]

The final sample of 181 subjects consisted of 83 boys and 98 girls. Followup testing was done whenever possible to obtain data from absentees.

---

[1]Sections chosen were II (high ability), X (average ability), and XVII (low ability). This selection process resulted in an exception to the exclusively female teacher provision since Section II had a male mathematics teacher. Also, in this school, boys in all three sections had male physical education teachers.

However, of the designated sample, six absentees were not included (five boys and one girl).

Experimenter Administered Measures

Masculinity-femininity. The Attitude-Interest Analysis Test or M-F Test is a disguised measure of mental masculinity developed in 1936 by Louis M. Terman and Catharine C. Miles (adult administration time: 40-60 minutes). Correlation of Form A with Form B of the test yields a reliability coefficient of .90. Split-half reliability is .92 and combined forms reliability is .96.

Validity can be tested by the extent of overlap between the sexes and varies according to norming group and to sub-test, (e.g., the percentage overlap for eleventh grade subjects on the total score of Form A is 8.36). The authors of the test make the following statement concerning validity of the test:

> The fact that the M-F test is composed of items empirically selected as showing sex differences in responses makes it, ipso facto, a measure of mental masculinity and femininity in the scope embraced by its contents. One may therefore say that the test is inherently and of necessity valid
>
> (Terman & Miles, 1936, p. 70).

With reference to the question of gradual disappearance of distinctive cultural sex differences and the erosion of male and female sex roles which some writers suggest is occurring today, a statement by Terman and Miles concerning sex differences is of particular interest:

> . . . the sexes differ fundamentally in their instinctive and emotional equipment and in the sentiments, interests, attitudes, and modes of behavior which are the derivatives of such equipment
>
> (Terman & Miles, 1936, p. 2).

It is upon such a nucleus that the M-F Test was built.

School interests. The measure of school interests used in this study was the Science Research Associates instrument, What I Like To Do: An Inventory of Children's Interests, prepared by Marcella R. Bonsall, Charles E. Meyers, and Louis P. Thorpe (1954) and designated for use in grades 4-7. The inventory is a checklist of 294 items providing separate scores for eight different interest areas: Art, Music, Science, Social Studies, Active Play, Quiet Play, Manual Arts, and Home Arts. Suggested time for administration in grades 5, 6 and 7 is 50 minutes. Reported reliabilities for the various subtests ranges from a low of .71 (art, girls) to a high of .98 (science, boys) with an overall mean reliability of .87. No validity data are available (Bonsall, et al., 1954; Buros, 1965).

A description of each sub-test in the Inventory follows using quoted excerpts from the examiner's manual for the test:

> The Art Interest measure "indicates frequency of preference for active work with various arts and crafts, plus appreciation of the fine arts."
>
> The Music Interest measure "indicates pupil appreciation for various types of music, as well as interest in active musical experiences."
>
> The Quiet Play Interest area "measures preference for both independent and group 'things to do' of a less active nature."
>
> The Home Arts Interest measure has items which "include a variety of 'around-the-house' activities that apply to both boys and girls."
>
> The Science Interest test "measures the child's curiosity about and interest in the natural world."
>
> The Social Studies Interest measure "indicates the degree of pupil interest in the various fields comprising social studies."
>
> The Active Play Interest measure includes "independent activities plus competitive and noncompetitive group sports."

> The Manual Arts Interest measure is "directed to boys and girls alike. Scores indicate interest in creative activities as well as the more routine 'shopwork.'"

Behavior acceptability. The measures of behavior acceptability are the result of teacher completion of an experimenter-designed form: Confidential Rating of Student Behavior (see Appendix for copy). This instrument was used to determine for each student, within his sex, two measures: (1) an assigned general behavior category based on the teacher's own subjective standards for overall behavior (categories used: Most Acceptable, Very Acceptable, Acceptable, Less Acceptable, and Least Acceptable); a within-sex ranking of behavior acceptability from most to least acceptable.

While making an evaluation of student behavior acceptability, this instrument at the same time provides the opportunity to determine what differences, if any, exist in teacher judgments of behavior in boys and girls.

Additional Data Collection

In addition to the information obtained through administration of the three instruments described in the previous section, a number of other items were obtained from student permanent records and report cards. These measures are described in the paragraphs below.

Grade point average. This measure was derived from teacher-assigned grades of the first semester of the current school year. The average was determined for each student by converting letter grades to numerical equivalents, summing these, and dividing the sum by the number of school subjects involved. Only academic subjects were used in determining this measure - language, spelling, reading, history, geography, science,

mathematics, etc. (The scale for conversion: A=4, B=3, C=2, D=1, F=0; for the rural sample: O=4, S=2, U=0.)

Intelligence. I. Q. scores were obtained from the student permanent records which had available results of the Lorge-Thorndike Intelligence Test, Level 3 (grades 4, 5, and 6) developed by Irving Lorge and Robert L. Thorndike. A total score composed of both verbal and nonverbal components was recorded. The test had been administered in October, 1966.

Achievement. Achievement test scores of the Science Research Associates Achievement Series were obtained for the overall areas of Language Arts (capitalization, punctuation, spelling, and grammatical usage), Reading (vocabulary and comprehension), and Arithmetic (arithematic reasoning, concepts, and computation). The achievement tests had been administered March, 1965.

Other information collected from student records included age, race, and occupation of parents.

Procedure

Although the procedure followed in the collection of data varied somewhat in accordance with the particular circumstances of the sample area, fundamentally, the steps followed were:

(1) administration of the M-F Test to a single sixth grade section with a time allowance of approximately 90 minutes;

(2) administration on the following day of An Inventory of Children's Interests to the same sixth grade section with a time allowance of approximately 75 minutes;

(3) collection from student records and report cards of the following information: age, race, parents' occupation, grades of the first semester, intelligence test scores, achievement test results in language arts, reading, and arithmetic.

Hypotheses

The findings reported earlier in the Review of Literature have been utilized to formulate the hypotheses of this study. A fundamental assumption in this formulation is that intrasex variations along the masculinity-femininity continuum will have the same direction as intersex differences (e.g., since girls who as a sex are low in masculinity are assigned higher grades than boys are, it is hypothesized that pupils of both sexes who are low in masculinity will be assigned higher grades than those of their own sex who are high in masculinity). Thus it is expected that the intersex differences will be reflected in intrasex differences.

If it can be shown that intrasex differences along the masculinity-femininity continuum are related to tested achievement, assigned grades, school interests, behavior acceptability, and intelligence, this would suggest an interaction between the m-f variable and the feminine sex character of the elementary school.

The following hypotheses have been derived from the findings of intersex differences revealed in the review of literature:

Behavior Acceptability.

H 1 There is a negative relationship between mental masculinity and teacher-judged behavior acceptability.

H 2 In behavior acceptability, the high masculinity group is lower than the low masculinity group.

Language Arts Achievement.

H 3 There is a negative relationship between mental masculinity and tested achievement in language arts.

H 4 In language arts achievement, the high masculinity group is lower than the low masculinity group.

Reading Achievement.

H 5 There is a negative relationship between mental masculinity and tested achievement in reading.

H 6 In reading achievement, the high masculinity group is lower than the low masculinity group.

Arithmetic Achievement.

H 7 There is a positive relationship between mental masculinity and tested achievement in arithmetic.

H 8 In arithmetic achievement, the high masculinity group is higher than the low masculinity group.

Grade Point Average.

H 9 There is a negative relationship between mental masculinity and grade point average.

H 10 In grade point average, the high masculinity group is lower than the low masculinity group.

Intelligence.

H 11 In boys there is a negative relationship between mental masculinity and general intelligence.

H 12 In girls there is a positive relationship between mental masculinity and general intelligence.

H 13 In boys general intelligence is lower in the high masculinity group than in the low masculinity group.

H 14 In girls general intelligence is higher in the high masculinity group than in the low masculinity group.

Art Interest.

H 15 There is a negative relationship between mental masculinity and interest in art.

H 16 In art interest the high masculinity group is lower than the low masculinity group.

Home Arts Interest.

H 17 There is a negative relationship between mental masculinity and interest in home arts.

H 18 In home arts interest, the high masculinity group is lower than the low masculinity group.

Music Interest.

H 19 There is a negative relationship between mental masculinity and interest in music.

H 20 In music interest, the high masculinity group is lower than the low masculinity group.

Quiet Play Interest.

H 21 There is a negative relationship between mental masculinity and interest in quiet play.

H 22 In quiet play interest, the high masculinity group is lower than the low masculinity group.

Science Interest.

H 23 There is a positive relationship between mental masculinity and interest in science.

H 24 In science interest the high masculinity group is higher than the low masculinity group.

Social Studies Interest.

H 25 There is a positive relationship between mental masculinity and interest in social studies.

H 26 In social studies interest, the high masculinity group is higher than the low masculinity group.

Active Play Interest.

H 27 There is a positive relationship between mental masculinity and interest in active play.

H 28 In active play interest, the high masculinity group is higher than the low masculinity group.

Manual Arts Interest.

H 29 There is a positive relationship between mental masculinity and manual arts interest.

H 30 In manual arts interest, the high masculinity group is higher than the low masculinity group.

Data Analysis

Initially the data were examined to determine the extent to which the intersex findings revealed in the review of literature were confirmed. Mean raw score comparisons between the sexes were made and tested for significance (ρ =.05, two tailed t-test). The sample was examined to determine possible significant differences in the m-f variable in regard to race and socio-economic status. The teachers' criteria for behavior acceptability were studied in relation to teacher m-f score.

Correlations. Spearman Rank-Difference Correlations were derived as follows: for each sex separately between masculinity and each of the other fourteen variables - behavior acceptability, achievement in language arts, reading, and arithmetic, grade point average, intelligence, and interest scores in art, music, quiet play, home arts, science, social studies, active play, manual arts. Each correlation was tested for significance using the formula for large samples - $t = r_s \sqrt{\frac{N-2}{1-r_s^2}}$ (Siegel, 1956).

Extreme group mean comparisons. Within each sex, high masculinity and low masculinity groups were selected using the upper and lower 27% of the m-f distribution (Kelley, 1939; Cureton, 1957; Anastasi, 1961). Extreme group differences, by sex, for each of the fourteen variables were tested for significance (ρ = .05, two tailed t-test).

III. RESULTS OF THE STUDY

Masculinity-Femininity

The Terman-Miles Attitude-Interest Analysis Test was developed in 1936 and, as might be expected, contains a number of items which today are outdated, non-discriminatory, and even unintelligible. For subjects at this age level (147 months) it is also a particularly lengthy and difficult instrument. Considering all these factors, the results of its use in the present study are reassuring as to the test's basic soundness and its general approach to the more stable attributes of mental masculinity and femininity.

A reaffirmation of the validity of the test is demonstrated in an analysis of the percentage overlap. The criterian groups used to validate the test originally were the men and women, boys and girls, who were utilized by Terman and his associates in item testing and selection. In administering the test to comparable test groups the amount of overlap between sexes is determined from the distribution of scores. Utilizing the procedures outlined by the test's authors, the percent overlap in the present study was calculated at 13.0. This figure compares favorably with the 8.7 Terman obtained with eighth grade subjects in his original work.

Terman has stated that "the primary purpose of the test is to bring sex differences into relief by measuring the extent to which a subject's responses diverge from the mean of his sex on just those test items to which the sexes do tend to respond differently" (Terman & Miles, 1936, p. 65). The masculinity-femininity scores of this study appear in Table XIII

of the Appendix (Frequency Distribution of Masculinity-Femininity Scores By Sex) and are summarized in Figures 1, 2, and 3 (pp. 24-26) and in Table III below. These data provide additional evidence of the continued validity of the test.

The mean difference in M-F scores between sexes is significant at the .001 level (Table III). Terman reports the range of M-F scores in the general adult population for males: mean of +52, S.D. of 50, range 200 to -100; females: mean of -70, S.D. of 47, range +100 to -200. It is interesting to note how closely the data obtained in this study relate to those reported by Terman and Miles (cf. Tables IV, V, and VI).

TABLE III MASCULINITY-FEMININITY SCORES BY SEX (SAMPLE)

	MEAN	S.D.	RANGE	SIZE OF RANGE	SIGNIF.
83 BOYS	+52.4	43.8	-50 to +146	196	.001
98 GIRLS	-67.9	49.0	-233 to +105	338	

TABLE IV MASCULINITY-FEMININITY SCORES OF TEACHERS

	SEX	N	MEAN	S.D.
PRESENT STUDY	F	7	-74.00	32.6
TERMAN STUDY	F	149	-72.06	42.8
TERMAN STUDY	M	132	+44.58	40.8

TABLE V MEAN M-F SCORES OF BOYS* COMPARED TO SELECTED SCORES REPORTED BY TERMAN AND MILES (1936)

GROUP	M-F SCORE	S.D.[1]	N
High School Boys.....	+77.1	-	308
College Boys.....	+69.3	-	278
Gifted Boys.....	+66.2	45.4	75
Adults (20's).....	+57.9	-	342
Delinquent Boys (older group).....	+52.6	-	153
General Population.....	+52.6	49.9	604
*Sixth Grade Boys (present study)....	+52.4	43.8	83
Adults, College Education.....	+50.4	-	531
Eighth Grade Boys.....	+46.1	53.9	100
Delinquent Boys (younger group).....	+43.7	46.6	129
Grade School Boys.....	+40.7	-	260
English Boys.....	+28.5	35.5	59
Japanese Boys (Honolulu).....	+25.5	43.0	32
Negro College Students.....	+14.5	51.5	51

TABLE VI MEAN M-F SCORES OF GIRLS** COMPARED TO SELECTED SCORES REPORTED BY TERMAN AND MILES (1936)

GROUP	M-F SCORE	S.D.[1]	N
College Girls (high intelligence)..	-36.2	-	92
College Girls.....	-54.1	-	295
Gifted Girls.....	-57.8	43.3	72
Private School Girls.....	-65.9	-	28
**Sixth Grade Girls (present study)..	-67.9	49.0	98
English Girls.....	-70.5	33.6	60
General Population.....	-70.7	47.5	696
Adults (20's).....	-74.2	-	604
Japanese Girls (Honolulu).....	-74.9	39.3	41
Chinese Girls.....	-75.0	50.0	51
High School Girls.....	-79.3	-	245
Delinquent Girls.....	-88.0	42.1	54
Negro College Girls.....	-94.3	41.3	25
Grade School Girls.....	-95.4	-	256
Eighth Grade Girls.....	-96.0	46.2	98

[1]Standard deviation was not provided for some groups.

Racial and social class factors in relation to M-F. While there were no significant racial differences indicated in mean M-F scores of girls, there was a difference between the races significant at the .001 level in boys (Table VII). A similar finding is reported by Terman and Miles in college students (Table V, p. 22); College Boys +69.3, Negro College Boys +14.5. Due to the small size of the Negro sample in the present study, the findings can serve for little more than speculation. It is interesting to note that the mean I. Q. in the present study for all boys together was 102.9, but for the 8 Negro boys it was 89.6. Similar differences in achievement scores in Language Arts and Reading were noted.

TABLE VII RACIAL FACTORS AND MASCULINITY-FEMININITY

GROUP	N	MEAN M-F	SIGNIFICANCE
White Male	75	+57.11	S (.001)
Negro Male	8	+8.38	
White Female	89	-68.71	NS
Negro Female	9	-59.89	

Subjects of the study were assigned to social class as explained in the Sample section (p.8). No significant difference in M-F scores was found between Middle and Lower Class groups.

TABLE VIII SOCIAL CLASS FACTORS AND MASCULINITY-FEMININITY

SEX	SOCIAL CLASS	N	MEAN M-F SCORE	SIGNIFICANCE
MALE	MIDDLE	43	+45.98	NS (.20 level)
	LOWER	40	+59.33	
FEMALE	MIDDLE	44	-76.41	NS (.20 level)
	LOWER	54	-60.96	

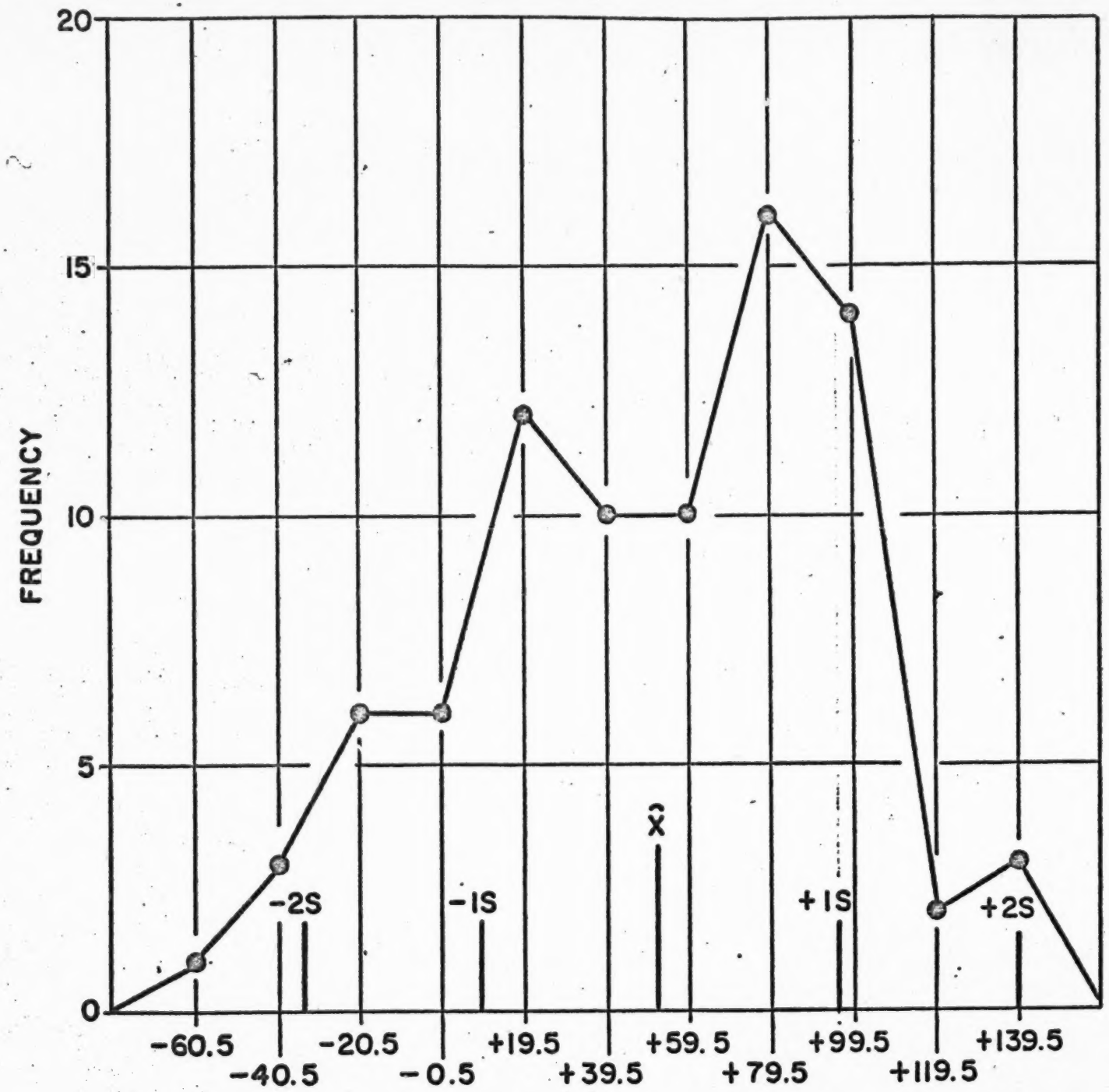

Fig. 1 FREQUENCY OF BOYS' MASCULINITY-FEMININITY SCORES

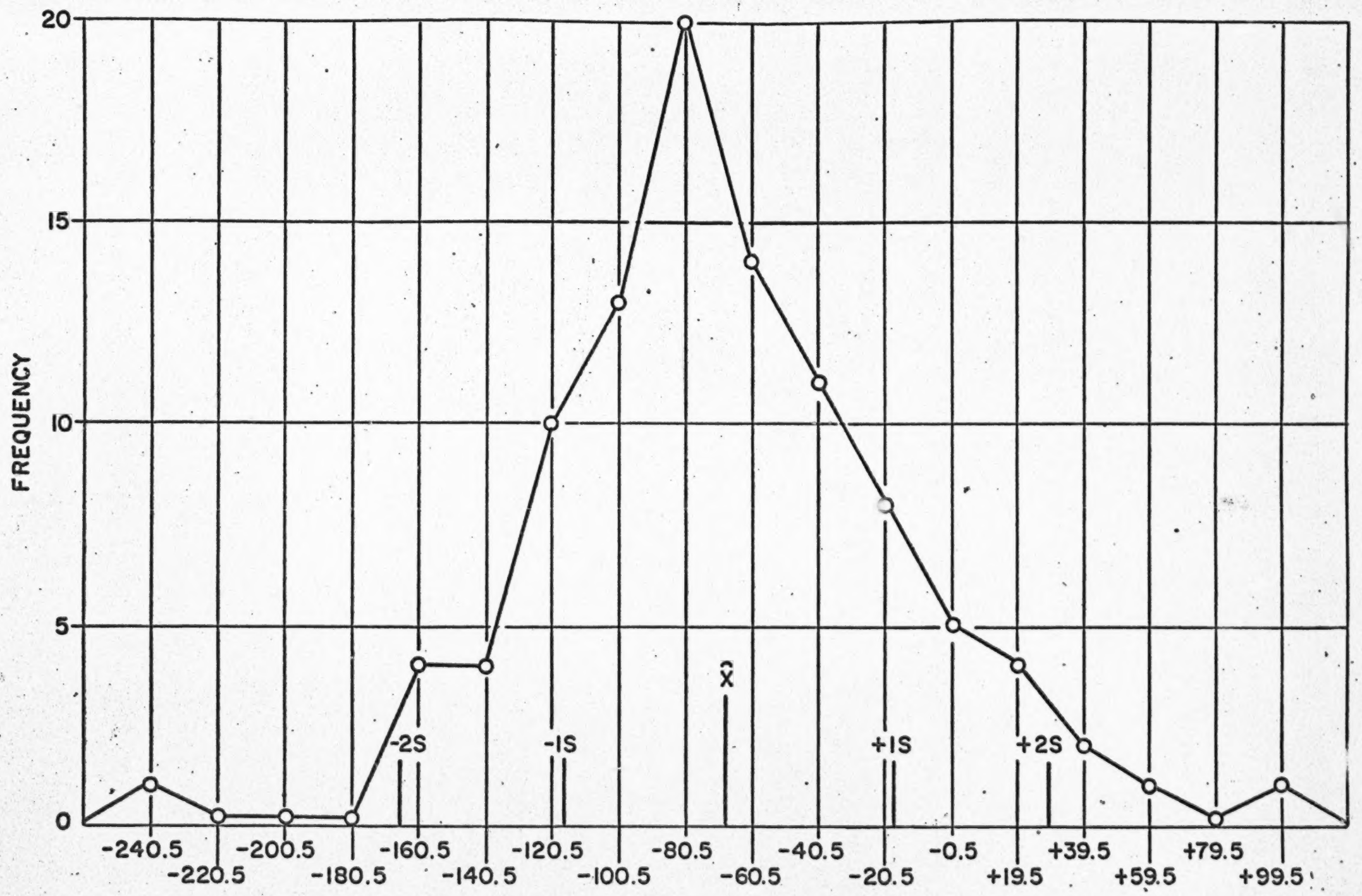

Fig. 2 FREQUENCY OF GIRLS' MASCULINITY-FEMININITY SCORES

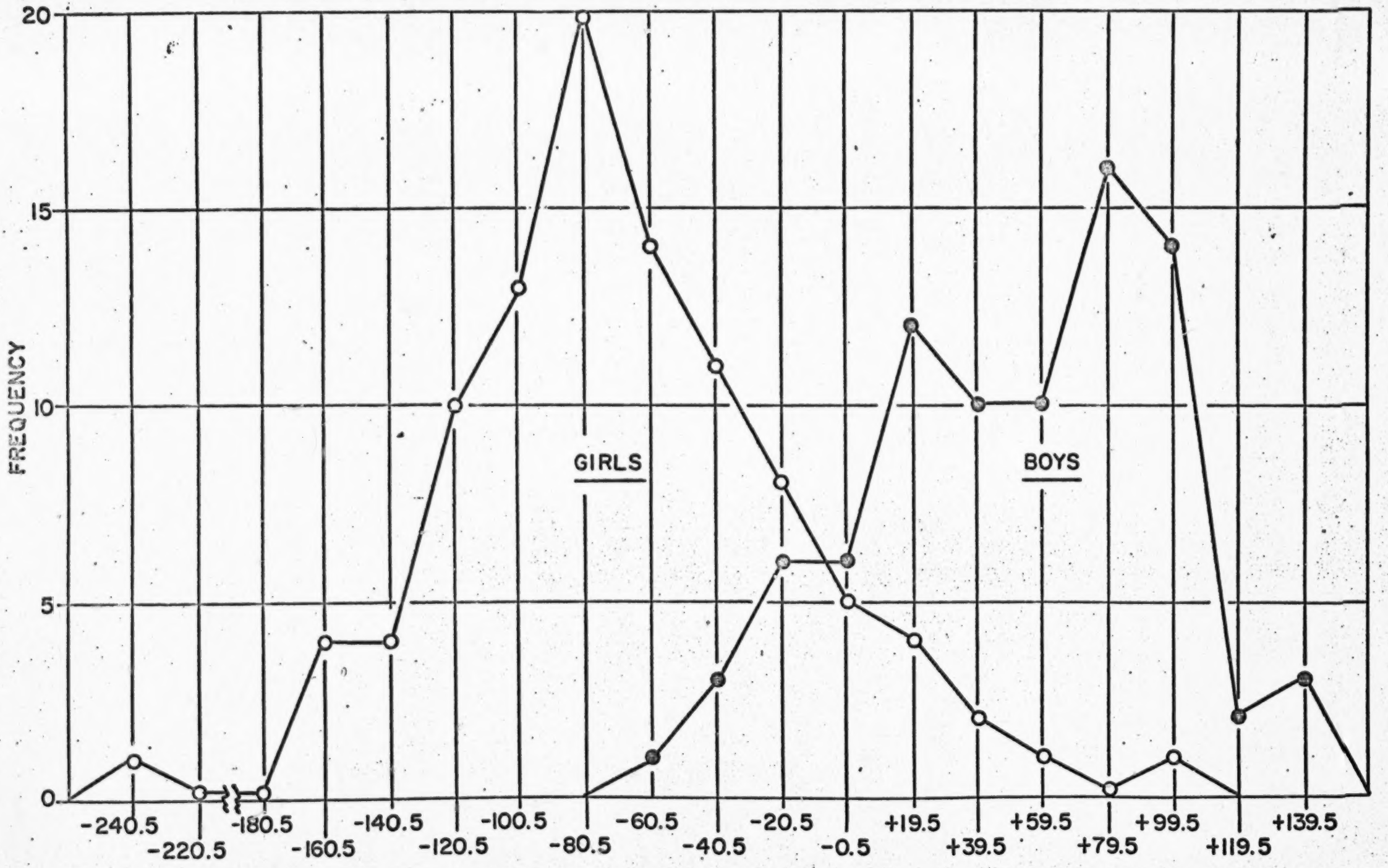

Fig. 3 FREQUENCY OF MASCULINITY-FEMININITY SCORES FOR BOTH SEXES

Behavior Acceptability

Hypotheses. H 1 There is a negative relationship between mental masculinity and teacher- judged behavior acceptability.

H 2 In behavior acceptability, the high masculinity group is lower than the low masculinity group.

Findings. The Spearman Rank-Difference Correlations between masculinity and behavior acceptability did not attain significance (+.16 for boys, -.15 for girls, .20 level; Fig. 5). Themean score difference between high masculinity and low masculinity groups was not significant in the girls and only approached significance for the boys (.20; Figs. 6 & 7). These data can only suggest the possibility that more masculine boys are judged by teachers as somewhat more acceptable than less masculine boys and that more masculine girls are judged somewhat less acceptable than less masculine girls.

Interpretation: The findings of this study do not support Hypotheses 1 or 2.

The behavior acceptability data were analyzed in two additional ways. First, intersex variations in assignment to each of the five categories of behavior acceptability were determined. In Table IX (p. 27) it is interesting that, while the proportion of boys and girls assigned to the Acceptable category is practically identical (35.3 and 35.4), the proportion of girls assigned to the upper two categories (Most Acceptable and Very Acceptable) is 50% greater than the proportion of boys so assigned (boys 32.9% compared to girls 48.5%). In the lower two categories (Less and Least Acceptable) almost twice the percent of boys compared to girls are assigned (16.1% girls compared to 31.8% boys). The data of Table IX

indicate clearly that the behavior of girls as a group is rated more acceptable than the behavior of boys in this study.

TABLE IX TEACHER RATINGS OF BEHAVIOR ACCEPTABILITY BY SEX OF STUDENT

BEHAVIOR CATEGORY	PERCENT OF BOYS		PERCENT OF GIRLS	
MOST ACCEPTABLE	13.6	32.9	19.2	48.5
VERY ACCEPTABLE	19.3		29.3	
ACCEPTABLE	35.3		35.4	
LESS ACCEPTABLE	19.3	31.8	10.1	16.1
LEAST ACCEPTABLE	12.5		6.0	

A second analysis of the behavior acceptability data was accomplished as follows: the percentage of males, females, and total sample assigned to the lower two behavior acceptability categories was related to the M-F score of the rating teacher using rank-difference correlation (Table X). The M-F score of each of the seven teachers in the study was ranked in order from most to least masculine. For each teacher the percent and its rank of boys, girls, and total sample assigned to the Less and Least Acceptable categories was derived. The rank-difference correlations between teacher masculinity and these ranked percents was then determined. The highest of the correlations (+.39) is that between teacher masculinity and percent of boys assigned to the two lower categories. However, neither this value nor the other two attain the level required for significance. (With an N of 7 the value of rho required for significance at the .05 level is .714.)

TABLE X RANK-DIFFERENCE CORRELATIONS BETWEEN TEACHER M-F SCORES AND PROPORTION OF BOYS, GIRLS AND TOTAL SAMPLE ASSIGNED TO LESS AND LEAST ACCEPTABLE BEHAVIOR CATEGORIES

TEACHER M-F		% ASSIGNED TO LESS AND LEAST ACCEPTABLE CATEGORIES					
SCORE	RANK	BOYS	RANK	GIRLS	RANK	TOTAL	RANK
-144	7	.14	7	.00	7	.07	7
-62	3	.20	5	.06	5.5	.13	6
-39	1	.62	1	.13	4	.40	1
-41	2	.18	6	.27	3	.23	5
-77	5	.46	2	.06	5.5	.24	4
-83	6	.31	4	.33	1	.32	2
-72	4	.33	3	.29	2	.31	3
CORRELATION		+.39 (NS)		+.15 (NS)		+.36 (NS)	

Language Achievement

Hypotheses. H 3 There is a negative relationship between mental masculinity and tested achievement in language arts.

H 4 In language arts achievement, the high masculinity group is lower than the low masculinity group.

Findings. Girls performed significantly better than boys on this measure (.001 level, Fig. 4). The correlations with masculinity in both sexes (-.34 for boys, -.32 for girls) were each significant at the .01 level (Fig. 5). Although in both sexes the results of the extreme group comparisons were in the expected direction (high masculinity, low language achievement; low masculinity, high language achievement), these within-sex

differences did not attain significance in the boys and only approached significance in the girls (.20 level; Figs. 6 & 7).

Interpretation. The findings of the study support Hypothesis 3 but do not support Hypothesis 4.

Reading Achievement

Hypotheses. H 5 There is a negative relationship between mental masculinity and tested achievement in reading.

H 6 In reading achievement, the high masculinity group is lower than the low masculinity group.

Findings. Girls performed better than boys on this measure (Fig. 4) and this difference approached significance (.10 level using a two-tailed t test). The correlations with masculinity were negative in both sexes (-.19 for boys and -.34 for girls) but attained significance only in girls (.01 level; Fig. 5). The results in the extreme group comparisons (Figs. 6 & 7) were in the expected direction (high masculinity, low reading achievement; low masculinity, high reading achievement), but did not approach significance.

Interpretation. The findings of the study support Hypothesis 5 for girls only. Hypothesis 6 is not supported by the data.

Arithmetic Achievement

Hypothesis. H 7 There is a positive relationship between mental masculinity and tested achievement in arithmetic.

H 8 In arithmetic achievement, the high masculinity group is higher than the low masculinity group.

Findings: Girls performed somewhat better than boys in arithmetic, but this difference did not attain significance (.20 level; Fig. 4). The

correlations with masculinity in both sexes were, contrary to expectation, negative (-.39 for boys, -.49 for girls) and significant at the .001 level in both sexes (Fig. 5). In the extreme group comparisons (Figs. 6 & 7) the differences approached significance in the girls (.06 level) but attained only the .20 level in boys. In both instances, however, the tendency toward significance was in a direction contrary to prediction.

Interpretation. The findings of the study do not support either Hypothesis 7 or 8. On the contrary, the alternate hypothesis to H 7 (There is a negative relationship between mental masculinity and tested achievement in arithmetic) is supported by the data. In a similar fashion the alternate hypothesis to H 8 (In arithmetic achievement, the high masculinity group is lower than the low masculinity group) approaches significance (.06 level) but in girls only.

Grade Point Average

Hypotheses. H 9 There is a negative relationship between mental masculinity and grade point average.

H 10 In grade point average, the high masculinity group is lower than the low masculinity group.

Findings. Girls achieved a significantly higher grade point average than boys (.01 level; Fig. 4). The correlations between grade point average and masculinity were negative (-.17 for boys, -.26 for girls) attaining significance in girls (.02 level) but not significant in boys (.20 level; Fig. 5). For the intrasex comparisons of extreme groups, the direction of differences was as predicted in both sexes (low masculinity, high grade point average; high masculinity, low grade point average), but attained significance only in girls (.05 level; Figs. 6 & 7).

Interpretation. The findings support Hypotheses 9 and 10 but for girls only.

Intelligence

Hypotheses. H 11 In boys there is a negative relationship between mental masculinity and general intelligence.

H 12 In girls there is a positive relationship between mental masculinity and general intelligence.

Findings. Intersex differences in intelligence were not significant (.10 level; Fig. 4). Correlations between masculinity and I. Q. were negative in both sexes (-.08 in boys, -.25 in girls) but significant only in girls (.02 level; Fig. 5). Intrasex extreme group comparisons were not significantly different in boys and only approached significance in girls (.10 level). Low masculinity was related to high intelligence; high masculinity to low intelligence, for both sexes (Figs. 6 & 7).

Interpretation. The findings do not support any of the hypotheses of this section (H 11, H 12, H 13, H 14). An alternate hypothesis to H 12 is supported: In girls there is a negative relationship between mental masculinity and general intelligence.

Art Interest

Hypotheses. H 15 There is a negative relationship between mental masculinity and interest in art.

H 16 In art interest the high masculinity group is lower than the low masculinity group.

Findings. A significantly greater interest in art was indicated by girls than by boys (.001 level; Fig. 4). Art interest correlated negatively with masculinity (-.20 for boys, -.12 for girls, but approached

significance only in boys (.10 level; Fig. 5). The extreme group comparisons yielded differences which were in the predicted direction (high masculinity, low art interest; low masculinity, high art interest) but these differences did not attain significance (Figs. 6 & 7).

Interpretation. The findings of the study do not support Hypotheses 15 or 16.

Interest in Home Arts

Hypotheses. H 17 There is a negative relationship between mental masculinity and interest in home arts.

H 18 In home arts interest, the high masculinity group is lower than the low masculinity group.

Findings. The intersex difference in home arts interest was significant at the .05 level (Fig. 4) with girls showing greater interest in home arts than boys. The correlations between masculinity and home arts interest was negative (-.46 in boys, -.29 in girls) and significant in both sexes (.001 in boys, .01 in girls; Fig. 5). Intrasex extreme group comparisons revealed differences significant at the .01 level in both sexes with high masculinity related to low interest in home arts and low masculinity related to high interest (Figs. 6 & 7).

Interpretation. Hypotheses 17 and 18 are supported by the findings of this study.

Music Interest

Hypotheses. H 19 There is a negative relationship between mental masculinity and interest in music.

H 20 In music interest the high masculinity group is lower than the low masculinity group.

Findings. Girls indicated significantly greater interest than boys in music (.10 level; Fig. 4). Interest in music correlated negatively with masculinity (-.42 in boys, -.27 in girls) and attained significance in both sexes (.001 for boys, .01 for girls; Fig. 5). The comparisons of extreme group differences were significant in both sexes (.02 in boys, .05 in girls) with high masculinity related to low music interest and low masculinity related to high music interest (Figs. 6 & 7).

Interpretation. The findings of this study support Hypotheses 19 and 20.

Interest in Quiet Play

Hypotheses. H 21 There is a negative relationship between mental masculinity and interest in quiet play.

H 22 In quiet play interest, the high masculinity group is lower than the low masculinity group.

Findings. No significant intersex difference was found in quiet play interest (Fig. 4). The correlations between masculinity and quiet play interest (-.35 in boys, -.18 in girls) attained significance in boys (.01 level) and approached significance in girls (.10 level using a two-tailed t test; Fig. 5). The intrasex comparison of extreme groups revealed significant differences in boys at the .02 level but in girls this difference was not significant (.20 level; Figs. 6 & 7). The relationship was as predicted, high masculinity related to low quiet play interest and the opposite.

Interpretation. The findings support Hypotheses 21 and 22 in boys only.

Interest in Science

Hypotheses. H 23 There is a positive relationship between mental masculinity and interest in science.

H 24 In science interest, the high masculinity group is higher than the low masculinity group.

Findings. The intersex difference in science interest was significant at the .01 level with boys showing greater interest than girls (Fig. 4). However correlations between masculinity and science interest were negative (-.30) and significant in boys (.01 level) and negative (-.13) but not significant in girls (Fig. 5). The differences derived from extreme group comparisons within sex were significant in boys (.05 level) but not in girls. In both cases, however, the direction of the relationship was contrary to predictions (i.e., high masculinity was related to low science interest and low masculinity was related to high interest in science). (Figs. 6 & 7)

Interpretation. Hypotheses 23 and 24 were not supported by the findings of this study. On the contrary, hypotheses alternate to these were supported: In boys there is a negative relationship between mental masculinity and interest in science; In boys' science interest, the high masculinity group is lower than the low masculinity group.

Interest in Social Studies

Hypotheses. H 25 There is a positive relationship between mental masculinity and interest in social studies.

H 26 In social studies interest, the high masculinity group is higher than the low masculinity group.

Findings. The intersex difference in social studies interest approached significance (.10 level, two-tailed t test; Fig. 4) with boys showing

greater interest in social studies than girls. Contrary to expectation, correlations of masculinity and interest in social studies were negative (-.36 in boys, -.20 in girls) and significant (.10 level, boys; .05 level, girls; Fig. 5). The intrasex comparisons of extreme groups revealed a significant difference in boys (.01 level) but not in girls (.20 level). The relationship in both sexes was between high masculinity and low social studies interest and the opposite (Figs. 6 & 7).

Interpretation. Hypotheses 25 and 26 are not supported by the findings of this study. The alternate hypothesis to H 25 is supported for both sexes: There is a negative relationship between mental masculinity and interest in social studies. An hypothesis alternate to H 22 is supported (boys only): In boys' social studies interest, the high masculinity group is lower than the low masculinity group.

Interest in Active Play

Hypotheses. H 27 There is a positive relationship between mental masculinity and interest in active play.

H 28 In active play interest, the high masculinity group is higher than the low masculinity group.

Findings. The intersex difference in active play interest was significant at the .02 level, with boys expressing greater interest in active play than girls (Fig. 4). Correlations between masculinity and active play interest were negative (-.15 for boys, -.12 for girls) but not significant in either sex (Fig. 5). Differences revealed by intrasex comparisons of extreme groups were not significant in either sex. However, the direction of relationship was between high masculinity and low interest in active play, contrary to expectation (Figs. 6 & 7).

Interpretation. The findings do not support Hypotheses 27 or 28.

Interest in Manual Arts

Hypotheses. H 29 There is a positive relationship between mental masculinity and interest in manual arts.

H 30 In manual arts interest, the high masculinity group is higher than the low masculinity group.

Findings. Intersex differences in manual arts interest were significant at the .001 level (Fig. 4) with boys expressing a greater interest in manual arts than girls. Correlations of masculinity with manual arts interest were negative in both sexes (-.25 in boys, -.06 in girls), but significant only in boys (.05 level; Fig. 5). Differences obtained in the intrasex comparisons of extreme groups were not significant in either sex, but their direction was contrary to prediction (high masculinity was related to low manual arts interest and the converse; Figs. 6 & 7).

Interpretation. The findings of the study do not support either Hypothesis 29 or 30. However, the alternate hypothesis to H 29 is supported for boys: In boys there is a negative relationship between mental masculinity and interest in manual arts.

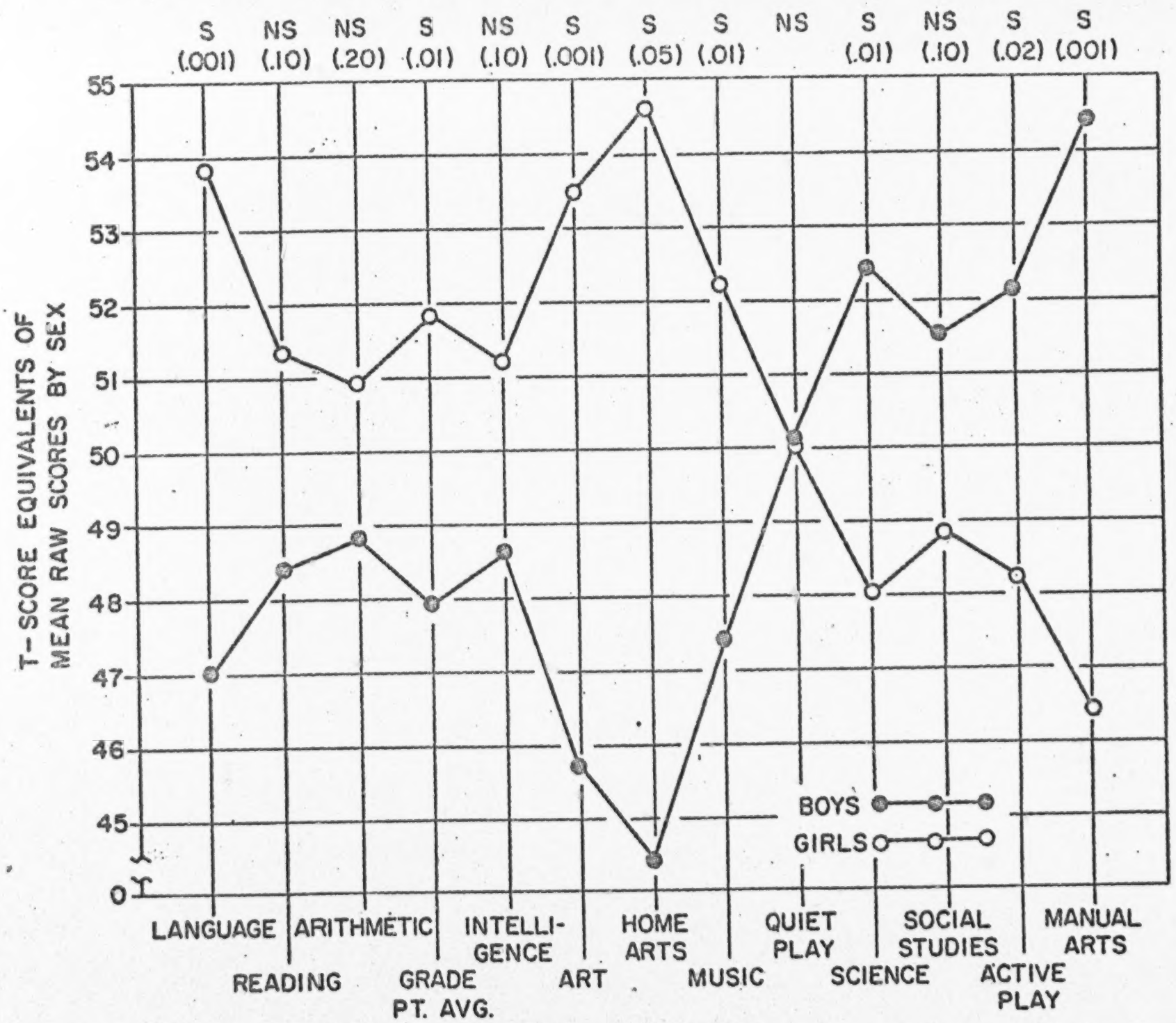

Fig. 4 T-SCORE EQUIVALENTS OF MEAN RAW SCORES BY SEX FOR THIRTEEN VARIABLES

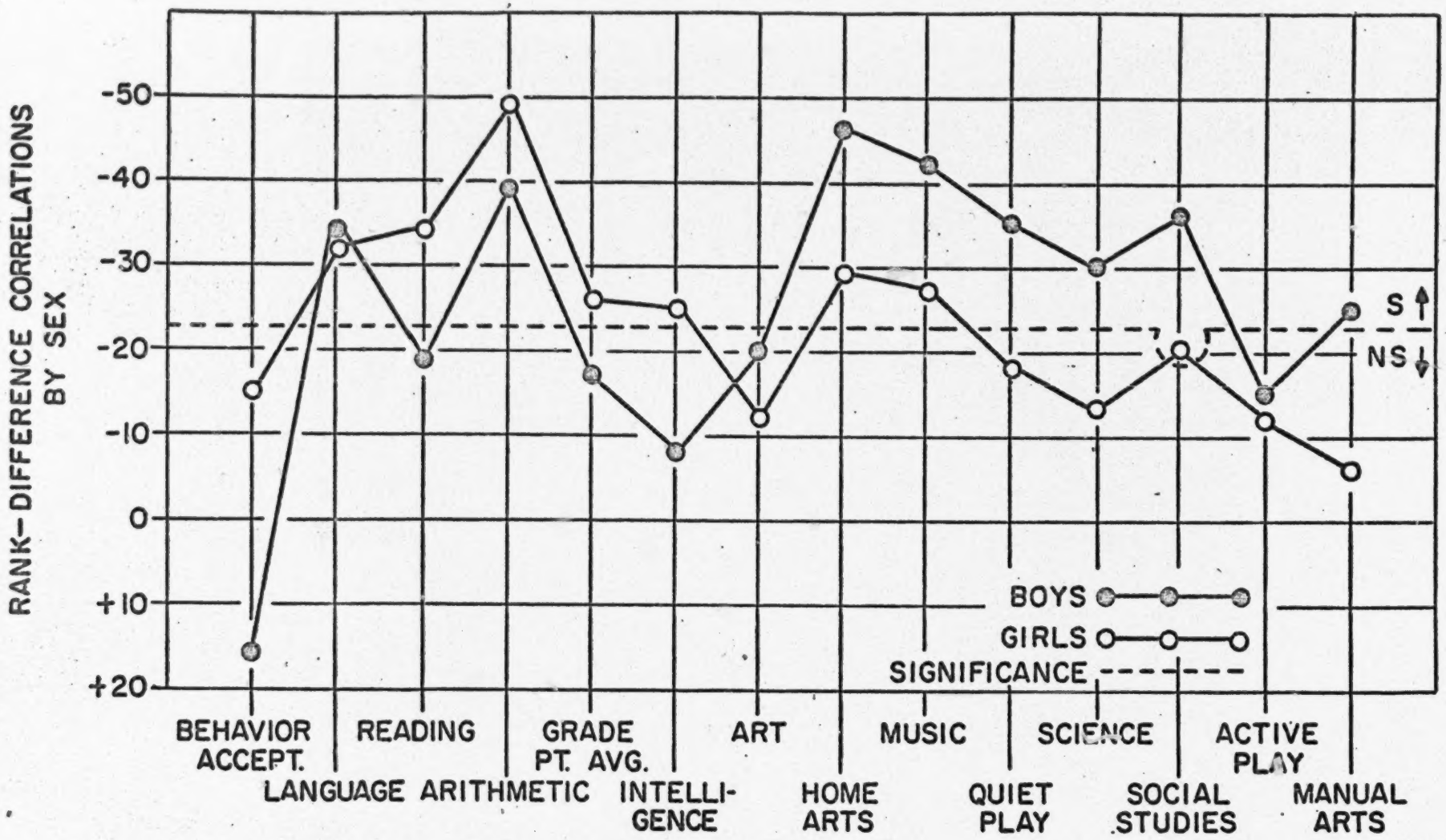

Fig. 5 RANK-DIFFERENCE CORRELATIONS BY SEX BETWEEN MASCULINITY AND FOURTEEN VARIABLES

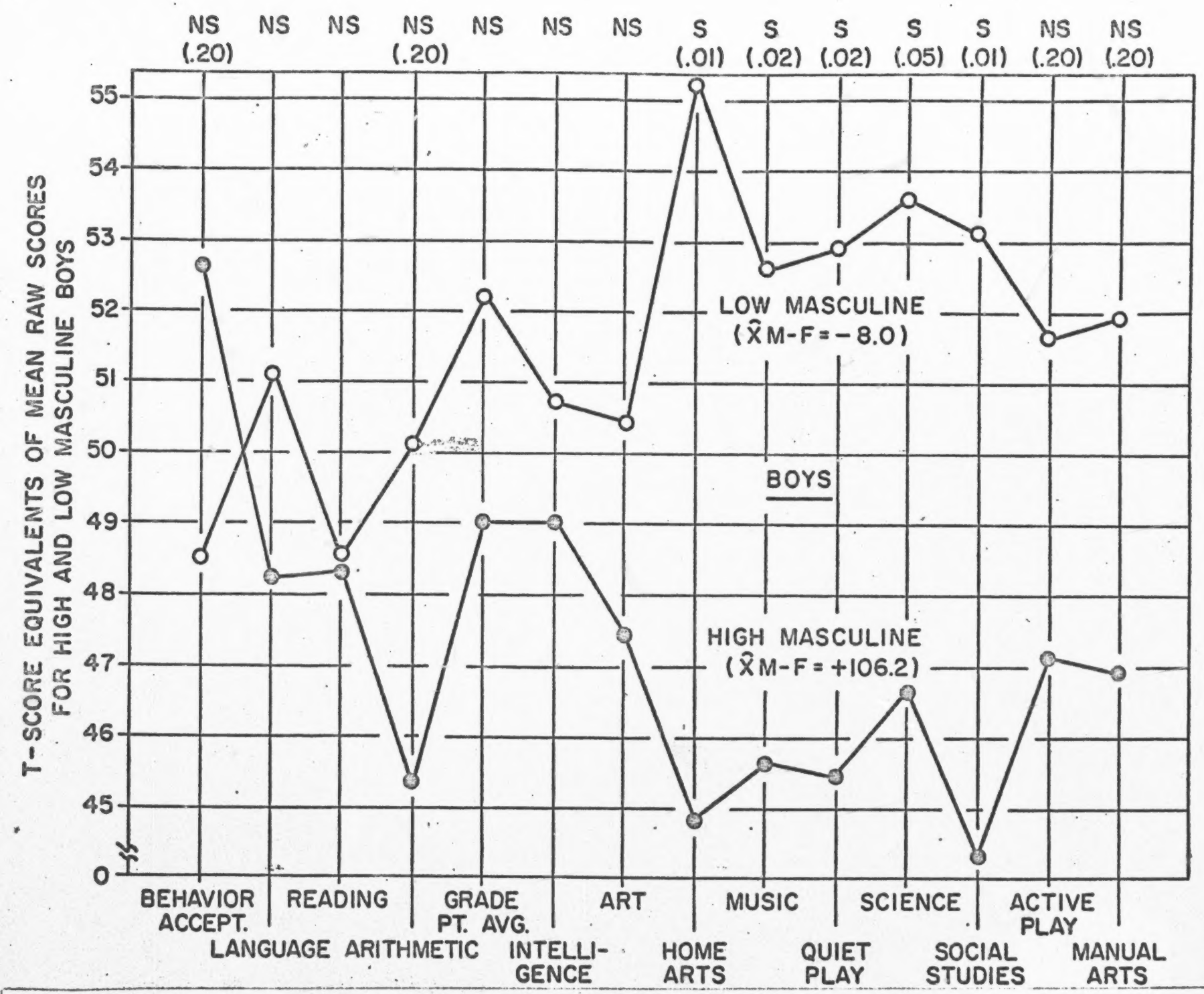

Fig. 6 T-SCORE EQUIVALENTS OF MEAN RAW SCORES FOR HIGH AND LOW MASCULINE BOYS IN FOURTEEN VARIABLES

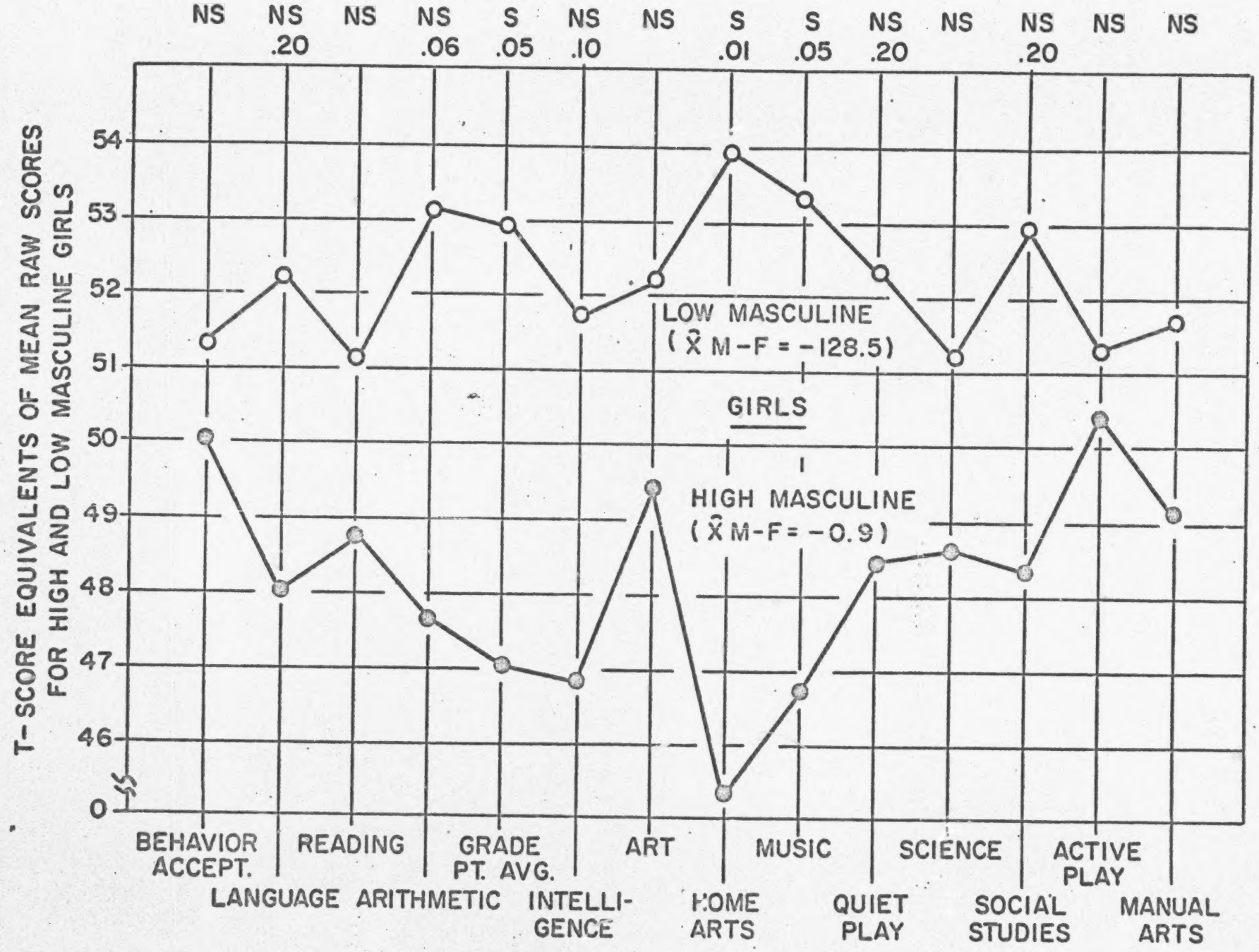

Fig. 7 T-SCORE EQUIVALENTS OF MEAN RAW SCORES FOR HIGH AND LOW MASCULINE GIRLS IN FOURTEEN VARIABLES

IV. DISCUSSION OF RESULTS

Significance for Educational Practice

The results of the present study are reasonable and not unexpected in the light of the earlier finding by Kagan (1964a, 1964b) that the prevailing sex character of the elementary school is predominantly feminine. The overall finding of negative correlations between mental masculinity in both sexes and school-related interests and achievement areas suggests strongly the need for changes in schools, particularly elementary schools, which will accommodate programs of study and instructional procedures to individuals at each end of the masculinity-femininity continuum, rather than primarily to individuals at the feminine end. Thus the findings of this study support an enlargement of our goal of equal educational opportunity for all, in order to include in this all, along with geographic regions, races, creeds, and social classes, all degrees of masculinity-femininity in both sexes.

Analysis of the findings concerning behavior acceptability lends additional and renewed support to earlier studies which indicated that the behavior of boys is more often judged by teachers as less acceptable than the behavior of girls. An important question is whether teachers typically expect a uniform standard of behavior and school performance from their pupils, regardless of, and without reference to sex. The data of this study provide support for a positive answer to this question and suggest the value in teacher education of more instruction directed to sex differences and their significance in terms of behavioral, achievement, and interest variables of the school situation.

While teacher masculinity-femininity was not demonstrated in this study to be significantly related to teacher judgment of behavior acceptability, the possibility of a relationship between these factors seems worthy of a more detailed study.

One of the most interesting and controversial innovations, at least for American education, is the renewed interest in, and experimentation with, segregation by sex (Lyles, 1966). The justification for this arrangement has been in part that, thereby, the differing interest and scholastic propensities of the two sexes might be better served. The value of such a grouping by sex would be put in question if it could be shown that the differences for the variables of concern are as great as or greater <u>within</u> sex as <u>between</u> sexes.

A comparison in fourteen variables of the difference between the means of each sex with the standard deviations within each sex (Table XIV of the Appendix) reveals that in only two instances (art interest and masculinity-femininity) of the fourteen cases do the intersex mean differences exceed either of the intrasex standard deviations. This finding of large intrasex variations and comparatively small intersex differences does not give support to a practice of grouping by sex for educational purposes. However a well designed field study to evaluate sex grouping in relation to other types of homogenous grouping would be very much in order.

<u>Implications for Research</u>

A study designed to measure the relative effectiveness of male and female teachers in instructing elementary boys and girls would be of

great interest, particularly as the variable of teacher masculinity-femininity might enter the situation. Unless it can be demonstrated empirically that male elementary teachers are, in comparison with female teachers, more successful in the instruction of boys and at least as successful with girls, there is little except intuition to support any attempt to increase the male staffing of the elementary school.

A study is needed to determine in what ways the school curriculum and instructional program can be altered and enlarged to be made more interesting, exciting, and challenging to that group of boys and girls identified in this study as highly masculine. To this end appropriate materials and approaches to learning must be devised and properly evaluated.

There has been demonstrated in this study the need for a measure of masculinity-femininity which, while updated and somewhat abbreviated, will retain the soundness and breadth of the Terman-Miles M-F Test. The sections of the M-F Test dealing with emotional and ethical attitudes (Sub-test 4) and interests (Sub-test 5) are, according to Terman, the most reliable portions of the instrument.

A revised and improved masculinity-femininity measure would be invaluable for further research with children in the middle and upper elementary grades.

V. CONCLUSIONS

The following hypotheses are supported by the findings of this study and are summarized in Table XI (p. 45):

H 3 There is a negative relationship between mental masculinity and tested achievement in language arts.

H 5b In girls, there is a negative relationship between mental masculinity and tested achievement in reading.

H 7 (Alternate) There is a negative relationship between mental masculinity and tested achievement in arithmetic.

H 9b In girls, there is a negative relationship between mental masculinity and grade point average.

H 10b In girls' grade point average, the high masculinity group is lower than the low masculinity group.

H 12 (Alternate) In girls, there is a negative relationship between mental masculinity and general intelligence.

H 17 There is a negative relationship between mental masculinity and interest in home arts.

H 18 In home arts interest, the high masculinity group is lower than the low masculinity group.

H 19 There is a negative relationship between mental masculinity and interest in music.

H 20 In music interest, the high masculinity group is lower than the low masculinity group.

H 21a In boys, there is a negative relationship between mental masculinity and interest in quiet play.

H 22a In boys' quiet play interest, the high masculinity group is lower than the low masculinity group.

H 23 (Alternate) In boys there is a negative relationship between mental masculinity and interest in science.

H 24 (Alternate) In boys' science interest, the high masculinity group is lower than the low masculinity group.

H 25 (Alternate) There is a negative relationship between mental masculinity and interest in social studies.

H 26 (Alternate) In boys' social studies interest, the high masculinity group is lower than the low masculinity group.

H 29 (Alternate) In boys, there is a negative relationship between mental masculinity and interest in manual arts.

TABLE XI SUMMARY OF HYPOTHESES SUPPORTED BY FINDINGS OF STUDY

THERE IS A NEGATIVE RELATIONSHIP BETWEEN MENTAL MASCULINITY AND: VARIABLE	BOYS	GIRLS
Language Arts Achievement...	+	+
Reading Achievement.....		+
Arithmetic Achievement.....	+	+
Grade Point Average.....		+
Intelligence.....		+
Home Arts Interest.....	+	+
Music Interest.....	+	+
Quiet Play Interest.....	+	
Science Interest.....	+	
Social Studies Interest.....	+	+
Manual Arts Interest.....	+	

THE HIGH MASCULINITY GROUP IS LOWER THAN THE LOW MASCULINITY GROUP IN: VARIABLE	BOYS	GIRLS
Grade Point Average.....		+
Home Arts Interest.....	+	+
Music Interest.....	+	+
Quiet Play Interest.....	+	
Science Interest.....	+	
Social Studies Interest.....	+	

The following hypotheses are <u>not</u> supported by the findings of this study (summarized in Table XII, p. 48):

H 1 There is a negative relationship between mental masculinity and teacher-judged behavior acceptability.

H 2 In behavior acceptability, the high masculinity group is lower than the low masculinity group.

H 4 In language arts achievement, the high masculinity group is lower than the low masculinity group.

H 5a In boys, there is a negative relationship between mental masculinity and tested achievement in reading.

H 7 There is a positive relationship between mental masculinity and tested achievement in arithmetic.

H 8 In arithmetic achievement, the high masculinity group is higher than the low masculinity group.

H 9a In boys, there is a negative relationship between mental masculinity and grade point average.

H 10a In boys' grade point average, the high masculinity group is lower than the low masculinity group.

H 11 In boys, there is a negative relationship between mental masculinity and general intelligence.

H 12 In girls, there is a positive relationship between mental masculinity and general intelligence.

H 13 In boys, general intelligence is lower in the high masculinity group than in the low masculinity group.

H 14 In girls, general intelligence is higher in the high masculinity group than in the low masculinity group.

H 15 There is a negative relationship between mental masculinity and interest in art.

H 16 In art interest, the high masculinity group is lower than the low masculinity group.

H 21b In girls, there is a negative relationship between mental masculinity and interest in quiet play.

H 22b In girls' quiet play interest, the high masculinity group is lower than the low masculinity group.

H 23 There is a positive relationship between mental masculinity and interest in science.

H 24 In science interest, the high masculinity group is higher than the low masculinity group.

H 25 There is a positive relationship between mental masculinity and interest in social studies.

H 26 In social studies interest, the high masculinity group is higher than the low masculinity group.

H 27 There is a positive relationship between mental masculinity and interest in active play.

H 28 In active play interest, the high masculinity group is higher than the low masculinity group.

H 29 There is a positive relationship between mental masculinity and interest in manual arts.

H 30 In manual arts interest, the high masculinity group is higher than the low masculinity group.

TABLE XII SUMMARY OF HYPOTHESES NOT SUPPORTED BY FINDINGS OF STUDY

THERE IS A NEGATIVE RELATIONSHIP BETWEEN MENTAL MASCULINITY AND:			THERE IS A POSITIVE RELATIONSHIP BETWEEN MENTAL MASCULINITY AND:		
VARIABLE	BOYS	GIRLS	VARIABLE	BOYS	GIRLS
Behavior Acceptability.	X	X	Arithmetic Achiev....	X	X
Reading Achievement....	X		Intelligence.....		X
Grade Point Average....	X		Science Interest.....	X	X
Intelligence.....	X		Soc. Studies Interest	X	X
Art Interest.....	X	X	Active Play Interest.	X	X
Quiet Play Interest....		X	Manual Arts Interest.	X	X
THE HIGH MASCULINITY GROUP IS LOWER THAN THE LOW MASCULINITY GROUP IN:			THE HIGH MASCULINITY GROUP IS HIGHER THAN THE LOW MASCULINITY GROUP IN:		
VARIABLE	BOYS	GIRLS	VARIABLE	BOYS	GIRLS
Behavior Acceptability.	X	X	Arithmetic Achiev....	X	X
Lang. Arts Achievement.	X	X	Intelligence.....		X
Grade Point Average....	X		Science Interest.....	X	X
Intelligence.....	X		Soc. Studies Interest	X	X
Art Interest.....	X	X	Active Play Interest.	X	X
Quiet Play Interest....		X	Manual Arts Interest.	X	X

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APPENDIX

TABLE XIII FREQUENCY DISTRIBUTION OF MASCULINITY-FEMININITY SCORES BY SEX

BOYS (83)				GIRLS (98)			
146	1	30	1	105	1	-69	1
136	1	25	1	57	1	-71	2
135	1	24	1	44	1	-72	2
128	1	20	1	38	1	-73	1
117	1	19	1	29	1	-75	2
108	1	18	2	28	1	-78	1
106	1	17	2	12	1	-79	1
105	2	14	1	11	1	-80	2
104	2	12	1	8	1	-82	3
102	1	11	2	5	1	-83	2
101	1	5	1	2	1	-85	1
100	1	1	1	-3	1	-88	2
98	2	0	1	-6	1	-89	1
95	2	-2	1	-13	1	-91	2
91	1	-3	1	-15	1	-93	1
89	1	-4	1	-16	1	-99	2
87	2	-11	2	-21	1	-102	1
86	2	-13	2	-23	2	-103	1
84	1	-17	1	-26	1	-104	1
83	1	-26	1	-28	1	-106	2
81	1	-35	1	-32	1	-107	1
80	2	-38	1	-37	1	-108	2
78	1	-41	1	-39	1	-110	1
76	2	-50	1	-40	2	-111	1
75	1			-43	1	-114	1
73	1			-44	1	-115	1
71	1			-46	1	-117	1
68	2			-47	1	-119	1
67	1			-48	1	-120	1
66	3			-49	1	-123	1
57	1			-52	1	-127	1
51	2			-53	1	-128	1
50	1			-55	2	-132	1
49	2			-58	1	-134	2
47	2			-59	1	-149	1
45	1			-61	1	-150	1
43	2			-62	1	-154	1
41	1			-63	1	-162	1
32	1			-64	1	-167	1
				-65	1	-233	1
				-67	2		

TABLE XIV INTERSEX AND INTRASEX VARIATIONS IN RAW SCORES FOR FOURTEEN VARIABLES

VARIABLE	DIFFERENCE BETWEEN RAW SCORE MEANS FOR EACH SEX	STANDARD DEVIATION OF RAW SCORES FOR:	
		BOYS	GIRLS
Language (%-ile)	15.28	26.81	24.17
Reading (%-ile)	8.10	28.96	26.96
Arithmetic (%-ile)	5.00	23.34	24.11
Grade Point Average	.305	.736	.826
Art Interest	4.10	5.13	5.37
Music Interest	2.79	6.31	5.79
Quiet Play Interest	0.06	6.54	6.66
Home Arts Interest	6.81	6.59	6.66
Science Interest	7.18	16.36	16.64
Social Studies Int.	2.74	9.69	10.56
Active Play Interest	2.81	7.51	6.91
Manual Arts Interest	5.15	6.61	6.23
Intelligence	3.95	15.50	15.23
Masculinity-femininity	120.3	43.8	49.0

TABLE XV MEAN RAW SCORES BY SEX FOR FOURTEEN VARIABLES

VARIABLE	BOYS	GIRLS	SIGNIF.
Language Achievement (%-ile)	51.0	66.2	S (.001)
Reading Achievement (%-ile)	45.1	53.2	NS (.10)
Arithmetic Achievement (%-ile)	53.4	58.4	NS (.20)
Grade Point Average	2.041	2.346	S (.01)
Art Interest	12.8	16.9	S (.001)
Music Interest	11.2	14.0	S (.01)
Quiet Play Interest	19.0	18.9	NS
Home Arts Interest	11.2	18.0	S (.05)
Science Interest	40.6	33.4	S (.01)
Social Studies Interest	25.3	22.6	NS (.10)
Active Play Interest	26.4	23.5	S (.02)
Manual Arts Interest	14.0	8.8	S (.001)
Intelligence (I.Q.)	102.9	106.9	NS (.10)

TABLE XVI SPEARMAN RANK-DIFFERENCE CORRELATIONS BY SEX BETWEEN MASCULINITY AND FOURTEEN VARIABLES

VARIABLE	BOYS	SIGNIF.	GIRLS	SIGNIF.
Behavior Acceptability	+.16	NS (.20)	-.15	NS (.20)
Language Achievement	-.34	S (.01)	-.32	S (.01)
Reading Achievement	-.19	NS (.20)	-.34	S (.01)
Arithmetic Achievement	-.39	S (.001)	-.49	S (.001)
Grade Point Average	-.17	NS (.20)	-.26	S (.02)
Art Interest	-.20	NS (.10)	-.12	NS
Music Interest	-.42	S (.001)	-.27	S (.01)
Quiet Play Interest	-.35	S (.01)	-.18	NS (.10)
Home Arts Interest	-.46	S (.001)	-.29	S (.01)
Science Interest	-.30	S (.01)	-.13	NS
Social Studies Interest	-.36	S (.01)	-.20	S (.05)
Active Play Interest	-.15	NS (.20)	-.12	NS
Manual Arts Interest	-.25	S (.05)	-.06	NS
Intelligence	-.08	NS	-.25	S (.02)

TABLE XVII T-SCORE EQUIVALENTS OF MEAN RAW SCORES FOR HIGH AND LOW MASCULINE BOYS AND GIRLS IN FIFTEEN VARIABLES

VARIABLE	BOYS			GIRLS		
	HIGH M	LOW M	SIG.	HIGH M	LOW M	SIG.
Masculinity-femininity	62.3	40.0	S (.001)	63.7	37.7	S (.001)
Behavior Acceptability	52.6	48.5	NS (.20)	50.0	51.3	NS
Language Achievement	48.2	51.1	NS	48.0	52.2	NS (.20)
Reading Achievement	48.3	48.5	NS	48.7	51.1	NS
Arithmetic Achievement	45.3	50.1	NS (.20)	47.6	53.1	NS (.06)
Grade Point Average	49.0	52.2	NS	47.0	52.9	S (.05)
Art Interest	47.4	50.4	NS	49.4	52.2	NS
Music Interest	45.6	52.6	S (.02)	46.7	53.3	S (.05)
Quiet Play Interest	45.4	52.9	S (.02)	48.4	52.3	NS (.20)
Home Arts Interest	44.8	55.2	S (.01)	45.3	53.9	S (.01)
Science Interest	46.6	53.6	S (.05)	48.6	51.2	NS
Social Studies Interest	44.3	53.1	S (.01)	48.3	52.9	NS (.20)
Active Play Interest	47.1	51.6	NS (.20)	50.4	51.3	NS
Manual Arts Interest	46.9	51.9	NS (.20)	49.1	51.7	NS
Intelligence	49.0	50.7	NS	46.8	51.7	NS (.10)

EXPERIMENTER-DESIGNED INSTRUMENT FOR TEACHER ASSESSMENT
OF BEHAVIOR ACCEPTABILITY

Confidential Rating of Student Behavior

The ratings requested below will be used for the purposes of research only and will not be seen either by students or school administrators.

Teacher Ratings of Behavior Acceptability are an important part of a research project in psychology at the University of Virginia. The investigation concerns the relationship between student behavior problems and student attitudes and interests.

Directions for Making the Rating

1. Assignment to category. Using your own standards of judgment, please assign each of your students to the appropriate behavior category, considering his or her overall behavior - MOST ACCEPTABLE, VERY ACCEPTABLE, ACCEPTABLE, LESS ACCEPTABLE, and LEAST ACCEPTABLE (boys and girls rated separately).

2. Assignment of rank within categories. Once each student has been placed in a category, please assign a number to him ranking him within that category. For instance, if five boys are placed in the category VERY ACCEPTABLE, the highest of these would be ranked #1 and the lowest, #5 with the others somewhere in between.

3. Summary of behavior typical of extremes. After grouping in categories and ranking all students, please spend a few additional minutes describing in brief the behaviors which you typically find for boys or girls in the highest and lowest categories you have used.